

Claims

What is claimed is:

1. An implantable device for repairing a cardiac valve having an annulus, two or more leaflets and a subvalvular apparatus, comprising:
 - a ring for attachment to the valve annulus; and
 - a restraining structure associated with said ring for restraining the abnormal motion of at least a portion of one valve leaflet.
2. The device of claim 1 wherein said restraining structure comprises one or more restraining members attached to said ring and extending across at least a portion of the interior of the circumference of said ring.
3. The device of claim 2 wherein one or more of said restraining members are rigid or semi-rigid.
4. The device of claim 2 wherein one or more of said restraining members are substantially straight.
5. The device of claim 2 wherein one or more of said restraining members are curved or bowed.
6. The device of claim 2 wherein one or more of said restraining members are flexible.
7. The device of claim 6 wherein one or more of said flexible restraining members are elastic.
8. The device of claim 6 wherein one or more of said flexible restraining members are non-elastic.
9. The device of claim 2 wherein one or more of said restraining members are string-like.
10. The device of claim 2 wherein one or more of said restraining members are flat or ribbon-like.
11. The device of claim 2 wherein the one or more restraining members extend across from one portion of the ring to another portion of the ring.
12. The device of claim 2 wherein the one or more restraining members are of similar thickness, shape, rigidity and elasticity.

13. The device of claim 2 wherein the device comprises at least two restraining members.
14. The device of claim 13 wherein the at least two restraining members have different thicknesses.
15. The device of claim 13 wherein the at least two restraining members have different shapes.
16. The device of claim 13 wherein the at least two restraining members vary in rigidity or elasticity.
17. The device of claim 13 wherein a primary restraining member extends between a portion of the ring to another portion of the ring.
18. The device of claim 17 wherein a secondary restraining member extends between the primary restraining member and the ring.
19. The device of claim 15 wherein said restraining structure comprises a plurality of secondary restraining members extending between said primary restraining member and said ring.
20. The device of claim 13 wherein said at least two restraining members are substantially parallel to each other.
21. The device of claim 13 wherein said at least two restraining members are in a non-parallel relationship with each other.
22. The device of claim 21 wherein said at least two restraining members form a crisscross pattern.
23. The device of claim 21 wherein said at least two restraining members form a zigzag pattern.
24. The device of claim 2 wherein the device comprises a plurality of restraining members.
25. The device of claim 24 wherein the plurality of restraining members form a star-like pattern
26. The device of claim 24 wherein the plurality of restraining members form a web-like pattern.
27. The device of claim 1 wherein said ring has a closed or complete ring configuration.
28. The device of claim 27 wherein said ring has a D-shaped configuration.

29. The device of claim 27 wherein said ring has a circular configuration.
30. The device of claim 1 wherein said ring has an open configuration.
31. The device of claim 30 wherein said ring has a C-shaped configuration.
32. The device of claim 30 wherein said ring has a saddle-shaped configuration.
33. A method for repairing a defective cardiac valve having a valve annulus and at least one valve leaflet, comprising the steps of:
 - accessing the defective cardiac valve;
 - providing a device comprising a restraining structure; and
 - implanting said device at the defective cardiac valve wherein said restraining structure is positioned such that said restraining structure restrains the abnormal motion of at least a portion of one valve leaflet.
34. The method of claim 33 wherein said restraining structure operatively restrains at least a portion of one valve leaflet from prolapsing during systole.
35. The method of claim 33 wherein said restraining structure operatively restrains at least a portion of two or more valve leaflets from prolapsing during systole.
36. The method of claim 33 wherein said cardiac valve is the mitral valve and the at least one valve leaflet is the posterior leaflet of the mitral valve.
37. The method of claim 33 wherein said cardiac valve is the mitral valve and the at least one leaflet is the anterior leaflet of the mitral valve.
38. The method of claim 33 wherein said device further comprises an annuloplasty ring wherein said restraining structure is associated with said annuloplasty ring.
39. The method of claim 38 wherein said step of implanting said device comprises attaching said annuloplasty ring to the valve annulus.
40. The method of claim 38 wherein said step of implanting said device comprises positioning said restraining structure with respect to said at least one valve leaflet whereby abnormal motion of said at least one valve leaflet is restrained.
41. A kit for repairing a defective cardiac valve, said kit comprising a plurality of the device of claim 1.
42. The kit of claim 41 wherein said cardiac valve is the mitral valve.
43. The kit of claim 41 wherein said devices have varying sizes and/or configurations.

44. The kit of claim 41 further comprising one or more of the group consisting of an annulus sizer, a device holder, a valve tester, a suturing device, sutures and instructions for using the devices.